

We claim:

1. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack comprising:
 - an article infeed for feeding a plurality of stripping devices,
 - a plurality of proportional shifters each coupled to one said stripping device for removal of articles from a feed stack in said infeed, said proportional shifter being adapted to set the number of articles to be removed from said feed stack, and wherein each proportional shifter has an article gauge adapted to measure the stack height of said set number of articles.
2. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 1 wherein each said proportional shifter is adapted to switch between two different pre-determined numbers of fragile articles to be removed from said feed stack.
3. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 1 wherein each said article gauge allows for a change in the stack height of a set number of articles in proportion to the number of articles removed without interrupting the flow of articles.

4. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 1 wherein the set number of articles in a stack is from about 2 to about 6 articles.

5. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 2 wherein the two different pre-determined numbers of articles in a stack is from about 2 to about 6 articles.

6. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 3 which is further adapted to allow a switch in-process between two pre-determined numbers of articles to be stripped from said feed stack while maintaining the adjustment in stack height.

7. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 6 which is adapted to adjust the thickness of a set number of stacked articles every 15 to 25 minutes.

8. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 1 wherein said system comprises a plurality of rows of article in-feeds and has a proportional shifter and an article gauge

adapted to receive each row of articles from said article in-feeds.

9. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 1 further comprising a plurality of wrappers, wherein for each said proportional shifter and article gauge, the system comprises a rotary material stripper (RMS) feeder adapted to continuously sweep the stack of articles removed from said article infeed into a single wrapper, and further wherein each combination of said proportional shifter, article gauge and RMS feeder forms an RMS feeder assembly.

10. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 9 wherein said RMS feeder assembly includes a series of three RMS feeders each having a proportional shifter and gauge unit, and the three RMS feeders are adapted to feed a single wrapper.

11. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 9 wherein each said wrapper is fed by or comprises a conveyor and is fed a series of slugs of articles by a series of three RMS feeders arranged so that, moving in a downstream fashion, a second feeder puts a stack having a pre-determined number of articles on top the stack of articles fed onto said

conveyor by the first feeder, and a third feeder puts another stack having a pre-determined number of articles on top the stack formed on the conveyor by said first and second feeders to form the said slug.

12. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 11 wherein said slug comprises from about 6 to about 18 articles.

13. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 10 further comprising a spare wrapper to accommodate product when a wrapper stops or breaks down.

14. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 9 wherein in the RMS feeder assembly, the proportional shifter and gauge unit is fed articles by a product chute, and the RMS feeder removes or shears articles from the product chute.

15. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack comprising:
an article infeed for feeding a plurality of stripping devices, and

a plurality of stripping devices each having an article gauge adapted to measure the stack height of a set number of fragile articles and to set the number of articles for removal from a feed stack.

16. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 15 wherein each said article gauge allows for a change in the stack height of a set number of articles in proportion to the number of articles removed without interrupting the flow of articles.

17. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 15 wherein the set number of articles in a stack is from about 2 to about 6 articles.

18. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 15 which is adapted to permit an in-process adjustment in the stack height of a set number of articles in each of said gauges.

19. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 18 which is adapted to adjust the thickness of a set number of stacked articles every 15 to 25 minutes.

20. A system for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 15 wherein said system comprises a plurality of rows of article in-feeds, and has an article gauge for each of said rows.

21. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack comprising:

feeding each of a plurality of stacks of articles supplied from an article infeed to one of a plurality of stripping devices,

setting a plurality of proportional shifters each coupled to one said stripping device to remove a set number of articles from each feed stack in said infeed, and

measuring the stack height of said set number of articles with an article gauge attached to each proportional shifter.

22. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 21 comprising switching each said proportional shifter between two different pre-determined numbers of fragile articles to be removed from said feed stack.

23. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 21 comprising measuring the stack height of a set number of articles with each said article gauge to determine any change in the stack height in proportion to the number of articles removed without interrupting the flow of articles.

24. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 21 wherein the number of articles in a stack is set from about 2 to about 6 articles.

25. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 22 wherein the two different predetermined numbers of articles in a stack is from about 2 to about 6 articles.

26. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 23 wherein said switching is performed in-process between two pre-determined numbers of articles to be stripped from said feed stack while maintaining the adjustment in stack height.

27. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 26 which comprises adjusting the gauged thickness of a set number of stacked articles every 15 to 25 minutes.

28. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 23 wherein said switching step prevents depletion of a supply feed stack relative to at least one other supply feed stack.

29. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 28 wherein said switching step prevents depletion of a plurality of supply feed stacks relative to one another.

30. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 29 wherein articles taken from said plurality of supply feed stacks and removed from a plurality of stripping devices are stacked to form a slug.

31. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 30 wherein said slug comprises from about 6 to about 18 articles.

32. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 30 further comprising diverting an article infeed to a spare wrapper to accommodate product when a wrapper stops or breaks down.

33. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack comprising:

feeding each of a plurality of stacks of articles from an article infeed to one of a plurality of stripping devices and

measuring the stack height of a set number of fragile articles with an article gauge attached to each of said plurality of stripping devices to set the number of articles for removal from a feed stack.

34. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 33 comprising adjusting each said article gauge to determine a change in the stack height of a set number of articles in proportion to the number of articles removed without interrupting the flow of articles.

35. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 33 wherein the set number of articles in a stack is from about 2 to about 6 articles.

36. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 33 wherein an in-process adjustment is made for the stack height of a set number of articles in each of said gauges.

37. A method for continuously packaging or sorting fragile articles having varying thicknesses in a stack according to Claim 36 comprising adjusting the gauged thickness of a set number stacked articles in each of said plurality of article gauges every 15 to 25 minutes.

38. A method for preventing waste in continuously packaging or sorting fragile articles having varying thicknesses in a stack comprising:

feeding each of a plurality of stacks of articles supplied from an article infeed to one of a plurality of stripping devices,
setting a plurality of proportional shifters each coupled to one said stripping device to remove a set number of articles from each feed stack in said infeed, and

measuring the stack height of said set number of articles with an article gauge attached to each proportional shifter.

39. A method for preventing waste in continuously packaging or sorting fragile articles having varying thicknesses in a stack comprising:

feeding each of a plurality of stacks of articles from an article infeed to one of a plurality of stripping devices and

measuring the stack height of a set number of fragile articles with an article gauge attached to each of said plurality of stripping devices to set the number of articles for removal from a feed stack.

40. A method as claimed in claim 39 wherein said fragile articles are crackers.